



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,541	10/26/2001	Alfred R. DeAngelis	2077A	4176

7590 04/02/2003

Milliken & Company
P.O. Box 1926
Spartanburg, SC 29304

EXAMINER

PARKER, FREDERICK JOHN

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 04/02/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

FR

Office Action Summary

Application No.	Applicant(s)	
10/047,541		
Examiner	Group Art Unit	

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE — 3 — MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Responsive to communication(s) filed on 10/26/01

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

Claim(s) 27-3 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 27-3 is/are rejected.

Claim(s) _____ is/are objected to.

Claim(s) _____ are subject to restriction or election requirement

Application Papers

The proposed drawing correction, filed on _____ is approved disapproved.

The drawing(s) filed on _____ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All Some* None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. _____.

Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____ Interview Summary, PTO-413

Notice of Reference(s) Cited, PTO-892 Notice of Informal Patent Application, PTO-152

Notice of Draftsperson's Patent Drawing Review, PTO-948 Other _____

Office Action Summary

Art Unit: 1762

DETAILED ACTION

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Art Unit: 1762

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract does not correspond with the subject matter of the claimed invention.

Claim Objections

2. Claim 29 is objected to because of the following informalities: In claim 29, the word "a" should be inserted before each member of the Markush Group, and a comma should be inserted after "colorant coating" to clearly distinguish the members. It also appears that --, a-- should be inserted between "coating protective" on line 3. Appropriate correction is required.

Art Unit: 1762

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 27,28,30,31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 27 is vague and indefinite because it requires a "method of preparing an electromagnetically conductive textile fabric" but there are no active preparation steps, only merely providing a fabric which is apparently already treated.

- Claim 28 is vague and indefinite because in I), it is unclear how fiber density and fabric density differ since the fabric density corresponds to the density of the fibers which make up the fabric; it is also unclear and unstated how a "conductivity gradient" is formed in I) and ii), as stated by the preamble.

- 30: line 8, the relative term "low" fails to convey the intended melting temperature of the polymer.

- Claim 31 is vague and indefinite because it depends directly from a canceled claim; "fabric" lacks proper antecedent basis. For examination, it will be

Art Unit: 1762

interpreted to mean the fabric is one "comprising conductive fibers providing a conductivity gradient through its thickness" per original claim 1.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by

Pittman et al US 5102727.

Pittman et al teaches on column 2, 8-47 to provide electrically conductive textiles by weaving or knitting high and low conductivity fibers to form an entangled textile such as shown in figure 1. While it's clear there is a conductivity gradient across its width, e.g. B-C, it is equally apparent that a conductivity gradient is present across its thickness; that is, one looking sideways at the weave will note an intrinsically conductive fiber 3 over or under a less/ non-conductive fiber 2 or 4. Thus, there is a conductivity gradient along its thickness at the point of stacking of conductive and non-conductive (or less conductive) fibers in accordance with "a", which meets the limitation of the claim.

Art Unit: 1762

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pittman et al US 5102727.

Pittman et al teaches on column 1 that it is known to apply electrically conductive fabrics to aircraft or vehicle structures for Radar Absorbing Materials,

Art Unit: 1762

radar being radio waves and hence electromagnetic radiation. It is also taught on column 2 8-47 to form textiles by weaving or knitting high and low conductivity fibers to form a textile such as shown in figure 1. While its clear there is a conductivity gradient across its width, e.g. B-C, it is equally apparent that a conductivity gradient is present across its thickness; that is, one looking sideways at the weave will note a conductive fiber 3 over or under a less/ non-conductive fiber 2 or 4. Thus, there is a conductivity gradient along its thickness by virtue of the stacking of conductive and non-conductive (or less conductive) fibers at any point of intersection, which meets the limitations of the claim.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conductive fabric of Pittman et al for absorbing electromagnetic radiation such as in RAM applications because electrically conductive fabrics are known for absorbing, and hence reducing, reflection of electromagnetic energy.

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams, Jr et al US 5316830.

Adams, Jr et al teaches an electrically conductive textile fabric with conductivity gradients in any direction. Woven, non-woven, knitted, or fabrics

Art Unit: 1762

of other constructions are coated with a conductive polymeric coating, and then the coating is selectively removed by water jets to provide a conductivity gradient. As shown in figure 5 and column 5, 47-68, individual layers of coated fabric with regions of polymer removed are piled up to form a composite, with the regions showing a gradient in the amount of conductive polymer removed in the z-direction levels. The presence of conductivity gradients along the thickness is therefore recognized. Given the types of fiber textiles taught, this would have encompassed entangled fabrics because the reference clearly recognized the technique is suitable for any type of fabric and hence the use of a fabric with entangled fibers would have been obvious. Column 2, 48-62 also teaches that conductivity gradients can be caused by "inherent construction characteristics", such as differential fiber mass/ number of fibers per unit area (same as "fabric or fiber density) or surface area of constituent fibers per 28(I).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Adams Jr et al on fabrics of entangled fibers because since the process is inclusive of any fabrics, there would have been the expectation of producing a fabric of coated entangled fibers with a conductivity gradient through its thickness.

Art Unit: 1762

10. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams, Jr et al US 5316830 in view of Bunyan et al US 6248393.

Adams, Jr et al is cited for the same reasons discussed above, which are incorporated herein. Applying an additional coating such as a fire retardant coating, is not taught.

Bunyan et al teaches an electrically-conducting EMI structure comprising an electrically conductive fabric which is wet coated with a fire-retardant composition which does not compromise the conductivity/ absorption effects.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Adams Jr et al by incorporating the coating of Bunyan et al for the expressed benefit of providing the EMI conducting fiber shielding with flame retardant properties.

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams, Jr et al US 5316830 in view of Pittman et al.

Adams, Jr et al is cited for the same reasons discussed above. The formation of a layered composite having a conductivity gradient along the thickness of the composite, wherein the composite layers are made of fibers (including entangled fibers) coated with a polymer solution which is applied and dried to form a conductive polymer coating thereon, and further wherein yarn

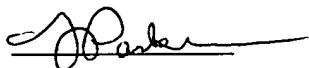
Art Unit: 1762

characteristics are recognized to form conductivity gradients, is the essence of the method. Needle punching layers to form an overlay is not taught. However, Pitman et al teaches a method of forming electrically conductive fabrics which can be held together with any known technique such as needle punching (col. 4, 58-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Adams Jr et al and using needle punching as taught by Pittman et al to hold together the fiber composite layers because needle punching is a known technique for adhering textiles, so there would have been the expectation that the technique would have held together the fabric composite layers of Adams Jr et al.

The "optional" limitations are noted but not further addressed because they are not required by the claim.

Art Unit: 1762

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred J. Parker whose telephone number is (703) 308-3474.



Fred J. Parker

March 31, 2003

10-321927

**FRED J. PARKER
PRIMARY EXAMINER**